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Combat Crew

strategic air command

DECEMBER 1986

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Judgment — Key to Good Decisions

Lt Gen James E. Light, Jr.
Commander, Fifteenth Air Force

In my last two articles I emphasized the importance of "knowing your stuff" in the daily operation of our multimillion dollar weapon systems. I would like to add some additional thoughts on this theme. Strategic Air Command Class A mishaps have destroyed expensive and sometimes irreplaceable weapons systems and have cost a number of lives. Too many of these incidents were the result of human error — an error in judgment. The people involved were trained and dedicated, yet through an inappropriate or impulsive decision, they created the conditions for catastrophe.

In many cases these errors were made under high stress, without much time to carefully analyze alternatives. Decisions were made quickly — in some cases too quickly — in unusual and tense situations. It is frustrating to realize that fatal errors in these instances resulted because combat crew members had not prepared for the situations they ultimately faced. Their judgments reflect this failure.

Our operations and maintenance crews are continually called upon to demonstrate their job knowledge. We task our operators and maintainers to rely on technical data for guidance. In our day-to-day operations, if we follow the tech data, we operate successfully. However, when we diverge from routine conditions to more complex situations, we need more than simple "cookbook" solutions supplied by the T.O.s. We are all familiar with the format of a cookbook. Cookbooks use a printed formula, require a minimum of analysis and only a shallow knowledge of the subject. Many day-to-day decisions made on the flight line or in the launch control facility require only the application of cookbook rules. Even simple emergencies are easily analyzed and corrected by using technical data.

However, fatal accidents seldom occur from a single failure. Fatal accidents usually occur from a multiple failure — the kind that our T.O.s do not address. It is during those multiple emergencies that you will need a deeper understanding of the aircraft systems and the physics of flight. The guidance given in these cases is "Fly the aircraft." It is certainly a nice sympathy, but provides little in substance on how to best handle the multiple emergency.

If the procedures you apply are successful, you will be credited with good judgment. If not, you'll be credited with poor judgment, perhaps fatally poor.

Judgment is evaluated on the result, but the real route to good judgment is the analysis of all the factors involved to finally selecting the best course of action. The analysis presumes a detailed knowledge of systems and the physics of flight to achieve the optimum solution. If the situation is not too severe, the perfect solution is not required.

Judgment is based on reasoning and reasoning is based on evaluating the facts and determining the correct solutions.

In deductive reasoning a principle is presented and several examples are given of how that principle can be applied. From this sort of teaching, it is hoped that given a situation, you will recognize the principle required and apply it. Unfortunately, we don't teach many principles in our training program, but we teach many situations and then hope the student will come up with the principle. Reviewing several examples and coming up with the principle is called inductive reasoning and is considerably more difficult than deductive reasoning.

We must teach the principles of our aircraft systems and aerodynamics instead of expecting a lot of inductive reasoning. In the middle of an emergency is the wrong time to try and find the principle. If it is a simple emergency, the T.O. will frequently give the recommended solution, but if it is a compound malfunction, the crew must seek the best solution. This is the point where we must draw upon our deeper knowledge, our knowledge of principles and apply them. If we do it well, we'll be credited with 'good' judgment.

For example, an engine loss on takeoff with the takeoff continued has a procedure in the T.O., but if you have reduced thrust on another engine, the condition becomes marginal. What are all the ways that you can reduce drag to continue to fly with the remaining thrust? Remain on the runway to accelerate as much as possible, raise the gear in ground effect, bring the flaps up slowly only at the lowest part of the drag curve, don't turn, etc. The sequence above is an example not mentioned in the T.O., but relies on the more basic aerodynamics to make a successful takeoff.

In the above sequence we did several things, but the principle was to minimize drag by understanding that the aircraft accelerates on the runway faster than in the air — by understanding that ground effect reduces drag — by understanding that flap retraction must be adjusted with slower acceleration. You certainly don't find much of this in the T.O. and little in the CCTS. We need to learn the principles and then apply them.

Knowing "how" to minimize drag and maximize thrust is better than the time worn cliche "fly the aircraft" without any help on how.

Our CCTS is being revised to improve the depth of knowledge of aircraft systems and the physics of flight. The good judgment title comes from making the correct decision which results from an analysis of the data and selecting the course of action that succeeds.

Our aircraft are reliable so you may never be called upon to make that life or death decision, but just in case you are, prepare well by understanding your aircraft systems and the physics of flight — be a winner, be known for "good" judgment. ★★★

FLARE

Combat Crew

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ON OUR COVER

The PEACEKEEPER's planned IOC this month at F.E. Warren AFB represents the first new ICBM system deployment since MINUTEMAN III.

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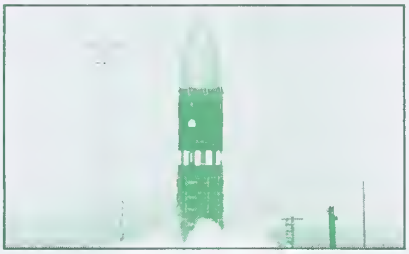

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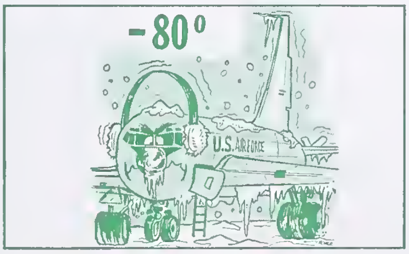

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NEXT MONTH . . . The future of SAC

Peacekeeper Operations

—Forging the Cutting Edge

Capt Ken Jewett
HQ SAC/DOMM

For operations, Peacekeeper IOC represents the culmination of 15 years of planning, coordinating, verifying, training, and evaluating in the areas of ground operations, test and evaluation, secure codes, and airborne operations. While the way has frequently been strewn with obstacles, unique challenges and opportunities, operations has met every milestone to support IOC. The entire process leading up to and through the final flurry of activity before first site turnover represents the forging of the "cutting edge" and the first new ICBM system deployment since Minuteman III, 15 years ago.

The area of ground operations encompasses the missile combat crews and everything necessary to train and equip them for their vital role in Peacekeeper. The process began with a training plan identifying initial and follow-on crew requirements and a general outline of how we would train our Peacekeeper crew members. From this foundation we built all of the requirements necessary to achieve certified crew members and established the schedule necessary to do it. Every aspect of the program hinges around one crucial factor — the human element.

A SAC selective manning process and an incremental selection approach was used to fill our initial crew requirements. Phase I of the initial cadre consisted of instructors and evaluators selected to receive contractor training and establish the local training and evaluation programs; Phase II provided the remaining instructor, evaluator, and line crews necessary to operate the initial site. With the personnel question addressed, all attention turned to obtaining the required support and training materials.

By far the single most important item supporting operations is the technical order. Since the Peacekeeper weapon control system is an update of the existing MMM/CDB system, most of the Peacekeeper T.O. came through revising the current Minuteman T.O. This makes the process sound simple, but it wasn't! Concurrent with Peacekeeper T.O. development, the Minuteman T.O. was undergoing a revision and the new Communications T.O. was under development. With a lot of hard work by the SAC team, headed by HQ SAC/DOMM and consisting of 90 SMW, 3901 SMES, and 4315 CCTS, and with outstanding cooperation from Boeing, we managed to have the T.O.s verified and printed in time to meet requirements. Draft copies were used to begin training in the new Missile Procedures Trainer (MPT) well in advance of alert requirements.

The MPT incorporates some of the latest in instructional system technologies as well as the lessons learned from years of experience with the Minuteman and Titan MPTs. Of course, new technologies and systems do not come easily and much hard work by scores of people from the unit level, HQ SAC, and the Boeing Aerospace Company has gone into this trainer. While all of the bugs have not been worked out, it will be our most capable trainer and a model for future trainer upgrades and design.

The Peacekeeper Follow-on Operational Test and Evaluation (FOT&E) program will begin in 1989 with the first SAC flight test from Vandenberg AFB, CA. The program will mirror the current FOT&E program for the SAC Minuteman force. Operational crew members and maintenance teams will be selected from F. E. Warren AFB to participate in the test launches, conducted throughout the life of the weapon system. In addition, Peacekeeper FOT&E will include extensive ground electronics testing at F. E. Warren AFB. This testing, called Simulated Electronic Launch Peacekeeper (SELP), parallels existing Simulated Electronic Launch (SELM) for SAC's Minuteman wings.

An aspect of Peacekeeper having a direct influence on Minuteman is the

ICBM Code Processing System (ICPS). The ICPS provides secure coding capability for Peacekeeper and the Common Airborne Launch Control System (ALCS). For Peacekeeper, the ICPS is installed at HQ SAC and F. E. Warren AFB with an additional unit at Vandenberg to support test and evaluation activities. The ICPS will also provide Minuteman coding capability for the remaining Minuteman squadrons at F. E. Warren, and by September 1988, will be deployed at the remaining wings, replacing the Code Inserter Verifier (CIV).

The ICPS combines equipment currently in the Air Force inventory with state of the art commercial equipment to provide increased coding capability with minimum downtime. A unique aspect of the ICPS is the capability to send secure, encrypted code data from HQ SAC to ICBM units over commercial telephone lines. This real time transfer of data provides a fast, sure means of getting secure code data to unit codes divisions.

A new Peacekeeper/Minuteman Common Airborne Launch Control System (ALCS) will provide alternate launch capability for Peacekeeper as well as Minuteman. The system's IOC, defined as three Common ALCS modified aircraft delivered to SAC, is July 1987. Eventually, all EC-135 aircraft will be Common ALCS modified, scheduled for 1992. Resident Common ALCS capabilities include program and launch of both Peacekeeper and Minuteman sorties.

The operations portion of bringing on a new system is delicately woven into weapon system development; operations, maintenance and requirements communities have worked as a team from the very start. Through several changes in personnel, a top-notch team has been able to work through the problems and schedule slips to deliver trained crews and code materials on time. As Peacekeeper becomes a current system, many members of the operations team will be turning their attention to the small ICBM program, bringing with them the lessons learned in Peacekeeper to the benefit of their successors, the Air Force and the country.

The Challenge Plus — Deploying the Peacekeeper

Capt Craig C. Whitehead
90 SMW, F. E. Warren AFB

In January, 1986, Brig Gen (then Colonel) Arlen D. Jameson, the 90th SMW wing commander, said, "Our greatest challenge in 1986 is to deploy the Peacekeeper intercontinental ballistic missile on time and safely with the full knowledge that the nation and the world will be watching us every step of the way."

As the wing began to take the steps to achieve this goal, virtually every organization and individual assigned to the wing was affected, from the protocol officer with the responsibility of making the arrangements for visiting guests and media, to the launch control facility cook, cooking meals at all hours of the day and night for military and civilian contractors working in the missile complex. The wing's people and resources were now totally committed to successfully deploying the Peacekeeper missile.

The Peacekeeper challenge was reemphasized by Col Gary L. Curtin after he assumed command of the wing in June 1986. Emphasizing upcoming evaluations as a barometer to measure success, Col Curtin said, "Our performance under the pressure of evaluation will be the measure of our readiness to meet the (Peacekeeper) challenge." The evaluations were already in process by mid-year and the wing was demonstrating to the command, the nation and the world the ability to meet this challenge. During Phase I of the Initial Nuclear Surety Inspection (INSI), the wing showed that the weapon system storage area complied with standards and provided adequate security. Phase II of INSI required the wing to demonstrate effective program management toward the successful Peacekeeper deployment — the wing passed this phase with flying colors. Phase III was canceled; however, phase IV of the INSI evaluated the capability of the wing, i.e., operations, security police, and maintenance (military and civilian), to posture the Peacekeeper missile and perform alert duties. Through the individual and combined efforts of each of these organizations the wing achieved the same success during Phase IV as was experienced during the previous phases.

In addition to the four phases of the INSI, the 3901st SMES conducted a special evaluation to further determine the ability of crew members to perform Peacekeeper alert. As directed by this 3901 SMES special evaluation and the INSI, eight Peacekeeper crews were evaluated on the Peacekeeper transition weapon system and Emergency War Order tasks. Each crew successfully completed its evaluation, thus enabling the wing to achieve three out of three highly qualified 3901 SMES evaluation results and five out of five satisfactory HQ SAC/IG (INSI) evaluation ratings.

The significance of the success the wing achieved in meeting the challenge to deploy the Peacekeeper missile is evident in the success achieved under the pressures of these evaluations. In December 1986, the final determination of the wing's mission readiness will be evaluated during the Nuclear Surety Inspection. During this same month, ten Peacekeeper missiles — the world's most modern intercontinental ballistic missile, will be on alert. With the full knowledge that the nation and the world were watching and evaluating us every step of the way, the 90th SMW will meet the challenge of 1986. The challenge for 1987 and 1988 will be to deploy the remaining forty Peacekeeper missiles, on time and safely.

PEACEKEEPER — Keeping the Peace

Maj Steve Busby
HQ SAC/XPQOD

On 19 April 1983, President Reagan endorsed the Scowcroft Commission's recommendation for the deployment of 100 Peacekeeper (MX) missiles in existing Minuteman silos. His rationale — by using existing silos the U.S. can quickly and economically upgrade its prompt "hard target kill" capability. To remain credible, the U.S. ICBM force must be effective across the full spectrum (including hardness) of potential targets. Hardened targets such as SS-17, 18 and 19 silos and underground command centers are logical candidates for the highly accurate Peacekeeper.

In FY84 and FY85, Congress authorized funding for 42 Peacekeepers. In FY86, Congress authorized the procurement of 12 missiles and capped deployment at 50 Peacekeepers in Minuteman silos. Deployment of the remaining 50 requires congressional approval of a "more survivable" basing mode. Currently, the Air Force is studying four follow-on basing modes: Super Hard Silos; "Carryhard," a multiple vertical shelter system; Shallow Tunnel; and Rail Mobile. Deployment of the second 50 Peacekeepers will complete the full deployment of 100 missiles recommended by the Scowcroft Commission.

Beginning in December 1985, Boeing depostured the first Minuteman launch facility at F. E. Warren AFB, Wyoming to begin Peacekeeper modification. Today, deployment is under cost and on schedule to meet the Initial Operational Capability of late December 1986. This month, SAC will count ten Peacekeepers on alert. SAC plans to complete deployment of the 50th missile by the end of 1988. Overall, deployment of the Peacekeeper has been extremely successful.

The Peacekeeper test program includes a total of 20 supporting test launches through 1987. We launched the first test missile in 1983, and all test launches to date have been successes. Peacekeeper accuracy is impressive — test scores show accuracy better than the design goal by over 30%. The key to Peacekeeper accuracy is a revolutionary new inertial measurement unit (IMU). This IMU, commonly known as the Advanced Inertial Reference Sphere, was designed by the Charles Stark Draper Lab at MIT, and is built by Northrop Electronics Division.

The missile's reentry system can deliver ten Mark 21 vehicles to targets in excess of 5,000 nm. Excellent accuracy and high payload make the Peacekeeper an extremely important contributor to our strategic Triad.

Peacekeeper is now in the field and operational. The Air Force team is bringing this complex new system on line smoothly. Everyone associated with development and deployment of Peacekeeper can take pride in the fact that this vital weapon system has survived the "process" and is taking its place on the front line of our deterrent forces.

PEACEKEEPER: A PERSPECTIVE FROM THE DIRECTORATE OF ICBM REQUIREMENTS (HQ SAC/XPQ)

PEACEKEEPER SPECIFICATIONS (LGM-18A)

	LENGTH	DIAMETER	WEIGHT	CONTRACTOR	FUEL
TOTAL	71′	92″	195,000 lbs		
STAGE I	27.5′	92″	108,000 lbs	THIOKOL	SOLID
STAGE II	17.5′	92″	60,000 lbs	AEROJET	SOLID
STAGE III	7.6′	92″	17,000 lbs	HERCULES	SOLID
STAGE IV	3.5′	92″	3,000 lbs	ROCKETDYNE	LIQUID

REENTRY SYSTEM: Built by AVCO, contains 10 Mark-21 reentry vehicles.
RANGE: IN EXCESS OF 5,000 NM.

"The **PEACEKEEPER** is here now and it works. It provides the badly needed capability to retaliate promptly against those assets most essential to the Soviet war objectives — their hardened ICBM silos and launch control facilities. Our present gap in that capability is the most serious deficiency in our deterrent posture." **GENERAL JOHN T. CHAIN, CINCSAC**

About the author. Capt Jewett is Chief, Advanced ICBM Operations Plans, HQ SAC/DOMM, where he works Peacekeeper, Small ICBM, and Missile and Space Panel issues for HQ SAC/DOM. He is a senior missileer and has served at 4315 CCTS as an instructor and 90 SMW as crew member and instructor.

About the author. Capt Craig C. Whitehead began his career at Offutt AFB in the 544th Strategic Intelligence Wing. In 1982 he became a DMCCC in the 321st SMW, Grand Forks AFB. Capt Whitehead was later assigned to the Standardization Evaluation Division and became the Peacekeeper Senior Stan Eval Crew Commander.

About the author. Maj Busby is the Operations Officer for the 740th Strategic Missile Squadron, Minot AFB. Prior to this assignment he was an ICBM Development Officer at HQ SAC/XPQ, where he worked on PEACEKEEPER and Common Airborne Launch Control System Deployment and Titan II deactivation. His previous jobs were all in operations: Titan II, Airborne Launch Control System, Airborne Battle Staff, and MAC Combat Control Team.

Thoughts for the Holidays

This December issue of Combat Crew provides an opportunity to focus on the events which form the context of the holiday season. Those historical events are the victory of Judah Maccabbee over the Syrians in 165 B.C. and the remembrance in the celebration of Hanukkah in the Jewish community. For the Christian community, the event is the birth of Jesus celebrated in the Christmas season. They are two events which recall the intervention of God in human history to achieve victory and salvation. God acted from above and beyond the human situation, yet through history, to accomplish a divine intention. This is the key concept to recall and celebrate.

I wish to emphasize the fact of divine intervention in history, for apart from this a sense of hopelessness and futility results. We live in a time of rapid social, political and technological change. Cultural patterns, social structures and traditional values have been shaken loose leaving individuals confused, uprooted, insecure and vulnerable. We have been described as the age of anxiety. Anxious about ourselves, the future, even to the point of questioning if there is a future, and if so, is it worth striving for. Questions about the nature of truth and how it is to be found, about the meaning of life for self and others, dominate our lives. The crises of chemical dependencies, of family violence and abuse, and escalating suicide rates have become the symptoms of feelings of futility, worthlessness, vulnerability, and fear. To recall, remember and celebrate the acts of God from above and beyond the human milieu provide the basis of hope and direction. We are reminded that the world is not ours alone, it remains the creation of God and serves God's purpose. God still acts to correct and maintain the course of history, much as a navigator corrects the flight of an aircraft. Hanukkah and Christmas are but two of God's inflight corrections of the course of human history and individual lives.

> **"We are reminded that the world is not ours alone, it remains the creation of God and serves God's purpose. God still acts to correct and maintain the course of history, much as a navigator corrects the flight of an aircraft."**

Chaplain (Colonel) Donald W. Ullrich
HQ SAC/HC

In a lighter vein, I heard a golf story the other day which in a humorous way does make a similar point. Moses, Jesus and God were on a long par three waterhole. It required a tee shot of 200 yards across the water to a rolling green. Moses teed off, and with a mighty swing he topped the ball which headed right for the water. The waters parted and the ball crossed on dry land to the green. Jesus teed off next, hit a lofty ball which took a high bounce on the water, and continued to bounce across onto the green. God was next, and He hooked His tee shot, far over the water and headed out of bounds. An eagle swooped down, grabbed the ball in mid air, and flew over the green. A bolt of lightning flashed, the thunder crashed, and the frightened eagle dropped the ball on the green and it rolled into the cup. Jesus walked over to God, put His arm around his shoulder, and said, "Good shot, Dad!"

In a profound sense, Hanukkah and Christmas are two of God's best shots. Human history is not over, nor are our lives, and there are other good shots available and coming until the course of history and life are complete. The beginning was God's, and so is the end. We are in between. What God purposefully began will not end by accident or miscalculation. The mechanics, the situations, the intricacies of life become awesome and seemingly overwhelming, but God and His purpose for His creation, and life itself, remain constant and sure. With that concept in mind the Psalmist once reminded Israel to "Look up, for your salvation draws nigh." Likewise this holiday season reminds us to "Look up," for salvation and redemption come from God. *May hope, goodwill, and purposeful living be yours as you celebrate the holiday season.*

BOMB COMP '86

Maj Bob Neidrick
Editor

Monday evening, 27 October 1986, will long be remembered in New York City as the night the Mets won the World Series, but to the men and women of the 92 Bomb Wing it will also be remembered as the night their competitors won the 1986 SAC Bombing and Navigation Competition. In fact, the Fairchild crews ran away with the competition, taking home nine of eleven trophies for which they were eligible. The biggest prize was the coveted Fairchild Trophy.

The Fairchild Trophy is awarded to the SAC collocated bomber-tanker wing with the best combined bombing and navigation team score. It is named in honor of General Muir S. Fairchild, WWI bomber pilot and former Vice Chief of Staff of the Air Force.

Last year's competition runner-up, the 92d, obtained a competition effectiveness (CE) of 0.9322 to win. Fairchild's domination is reflected in its wide lead over the second place finisher, the 410 BMW, K. I. Sawyer AFB, which earned a CE of 0.8844.

In addition to the Fairchild, the 92 BMW won the Saunders Trophy — presented to the KC-135 unit with the most points for all activity; the Mathis Trophy — the B-52/F/FB-111 unit with the most points for high and low level bombing including time control; the John D. Ryan B-52 Trophy — presented to the B-52 unit with the most points for low level bombing including time control; the Russell E. Dougherty SRAM Trophy — the B-52/FB-111 unit with the most points for simulated SRAM launches; William J. Crumm Linebacker Memorial Trophy, the B-52 unit achieving the most points for high altitude bombing and time control; Curtis E. LeMay Bombing Trophy, the B-52/F/FB-111 crew with the most points in high and low level bombing and time control. Additionally, Fairchild bomber crews E-50 and E-10 finished first and second for the Best B-52 crew, and tanker crews S-152 and E-111 placed first and fourth for Best KC-135 crew honors.

In the race for the two trophies that it didn't win, the Bruce K. Holloway Navigation Trophy and the James F. Bartsch ECM Trophy, the 92 BMW finished second and third, respectively.

Members of Fairchild's 92 BMW show their pleasure at capturing an impressive array of trophies.

"The pilot who forgets the basic principles of flying has lost his ability to pilot an aircraft safely."
—Gen Curtis E. LeMay, USAF, (ret)

Gen John T. Chain Jr., CINCSAC, congratulates Col James W. Meier, commander of the victorious 92 BMW.

Winning "Bomb Comp" was particularly meaningful for the 92 BMW because it was their first Fairchild since 1953 when they flew B-36Ds. This year marked the thirtieth SAC Bombing and Navigation Competition which has been held periodically since 1948. Since the initial competition, three primary objectives have been maintained: to demonstrate strategic bomber and tanker capabilities; test new equipment, procedures, tactics and concepts; and enhance esprit de corps by recognizing crew and unit professionalism.

The competition which began on 3 September and culminated with the symposium held at Barksdale AFB, 27-29 October, reflected the essence of SAC's mission — to be so devastatingly effective in the application of firepower that our slogan "Peace is Our Profession" remains true. This year's competitors represented 13 bombardment wings, 11 other refueling units including the Air National Guard and the Air Force Reserve, and Tactical Air Command F-111 wing and fighter interceptors from TAC's 1st Air Force. This year was the first time since 1983 that no foreign participants competed.

Although Fairchild took home the majority of the trophies, other units won several awards. The 380 BMW from Plattsburgh AFB won the General John C. Meyer Memorial Trophy. This trophy is awarded to the F/FB-111 unit achieving the highest damage expectancy (DE) rating. Plattsburgh earned a DE of 0.9141. The 509 BMW, Pease AFB, finished second with a 0.7911 DE.

The Major James F. Bartsch ECM Trophy was won by the 319 BMW, Grand Forks AFB. This trophy is awarded to the B-52 unit achieving the most points for ECM. The 42 BMW from Loring was the ECM runner-up.

The Bruce K. Holloway Trophy, formerly known as the Navigation Trophy, is awarded to the tanker unit compiling the most points by its crews on the celestial navigation mission. The 7 BMW, Carswell, was this year's winner followed by Fairchild.

The General B. L. Davis Most Improved Unit Trophy is awarded to the unit with the highest percentage of improvement in the Fairchild and Saunders results over the previous year. The 340 AREFW of Altus AFB and the 28 BMW from Ellsworth AFB finished first and second, respectively, for this honor.

Eighth Air Force was the recipient of the Lieutenant General James H. Doolittle Trophy. The Doolittle is presented to the SAC NAF whose B-52 units compile the best overall results in low level bombing and SRAM categories during the competition.

The 2 BMW from Barksdale AFB won the General Richard H. Ellis Best KC-10 Unit Trophy. Formerly known as the McDonnell-Douglas Trophy, this award is presented to the unit whose KC-10 team achieves the most points for all activity.

Honors for Best Crews were awarded to crews with the highest percentages of points for all activity. The Best FB-111 crew was S-51 from Plattsburgh. Crew S-01 from the 27 TFW, Cannon AFB, was the Best TAC F-111 crew. The Best KC-10 Crew award was presented to R-017, 32 AREFS, Barksdale AFB.

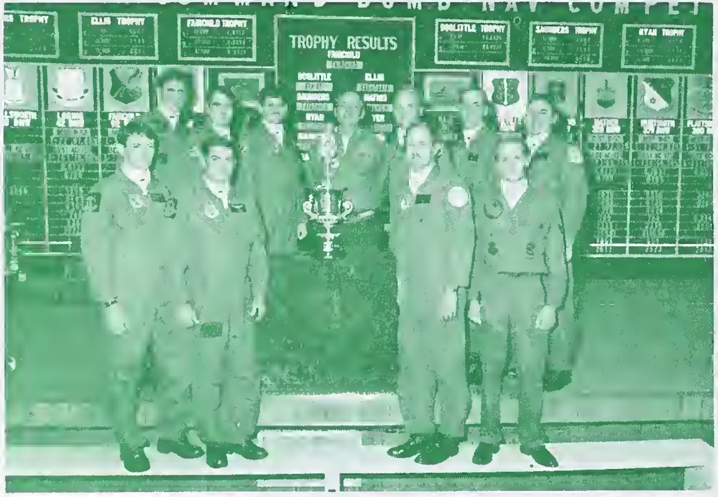
The 1986 competition appears to be the last one held in the customary format. Under General Chain's leadership research is being done and meetings are being held to develop new scenarios. New ideas include a conventional mission for bombers and air refueling for tankers. A new concept for SAC crews will be that of landing at a base other than home station. Each crew will prepare their aircraft for takeoff, then launch from that base.

Although not everyone could take home a trophy, everyone who participated in the competition should be proud of their accomplishments. As General Chain, Commander in Chief, SAC, said at the competition banquet, **"You are all winners, and I like winners."**

cont'd on next page

Gen Chain presented the Doolittle Trophy to Lt Gen Kenneth L. Peek Jr., Eighth Air Force Commander.

Team members from the 92 BMW, Fairchild, with their prize — the Saunders Trophy, awarded to the KC-135 unit with most points for all activity.



The John D. Ryan Trophy also went to the 92 BMW of Fairchild AFB.

IC AIR COMMAND BOMB-NAV COMPETI
TROPHY RESULTS

The Richard H. Ellis Best KC-10 Unit Trophy was awarded to the 2 BMW, Barksdale AFB.

IC AIR COMMAND BOMB-NAV COMPETI
TROPHY RESULTS

The prestigious Mathis Trophy was garnered by B-52 crew members of Fairchild's 92 BMW.

The F/FB-111 unit with highest damage expectancy wins the Meyer Trophy — in 1986, the winner was the 380 BMW, Plattsburgh.

Once again, the 92 BMW takes home another award — this time, it's the Russell E. Dougherty SRAM Trophy.

The William J. Crumm Linebacker Memorial Trophy went to B-52 crew members of Fairchild's 92 BMW.

The James F. Bartsch ECM Trophy was presented to proud members of the 319 BMW, Grand Forks AFB.

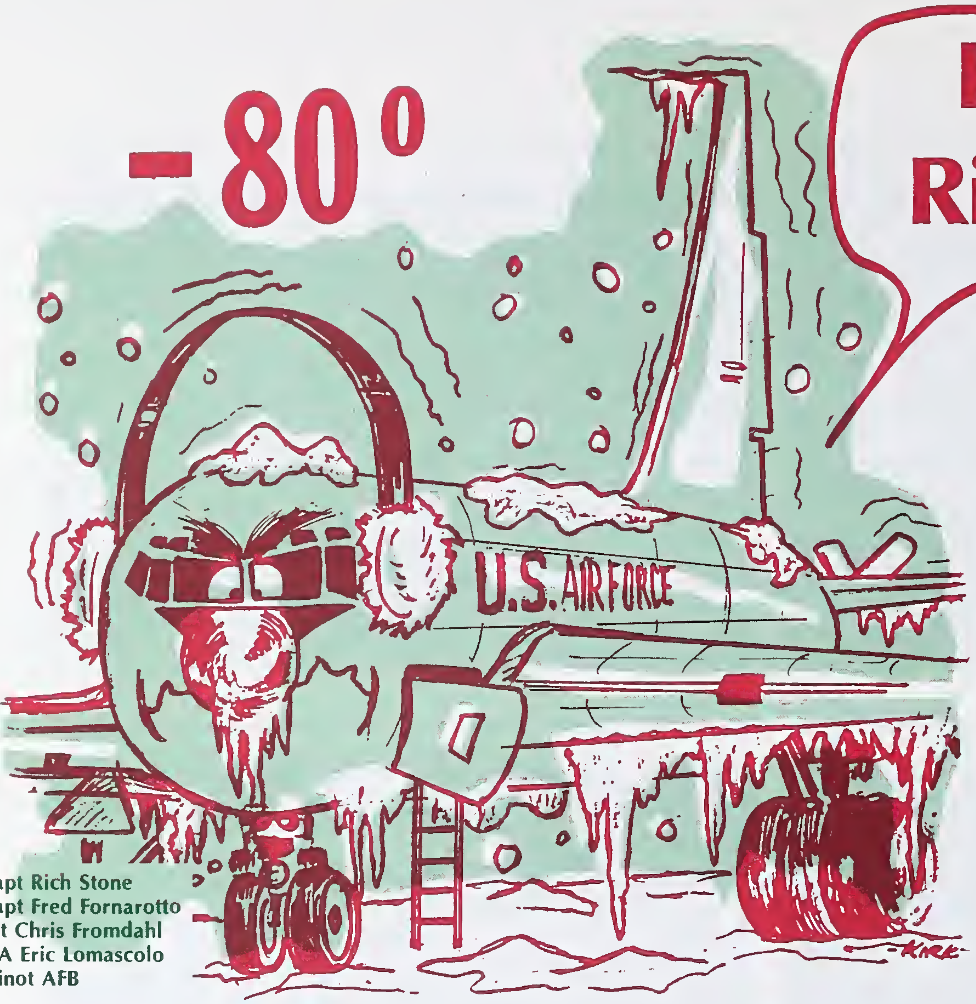
TEGIC AIR COMMAND BOMB-NAV COMP
TROPHY RESULTS

Carswell's 7 BMW won the Bruce K. Holloway Navigation Trophy, which goes to the KC-135 unit with most points in celestial navigation.

The recipients of the Curtis E. LeMay Bombing Trophy are the 92 BMW, Fairchild AFB.

Shown with the Bennie L. Davis Most Improved Unit Trophy are its winners, the 340 AREFW, Altus AFB.

-80° Keeps The Riff-Raff Out



Capt Rich Stone
Capt Fred Fornarotto
1Lt Chris Fromdahl
SrA Eric Lomascolo
Minot AFB

Your car is just starting to get warm when the squadron building (where you were supposed to meet your crew five minutes ago) "breaks out" of the blizzard. The drive to work was difficult with that wall of blowing snow blocking your vision. The darkness sure didn't help, either. Once in a while you saw the center line on the highway, and you're now starting to realize that this is going to be "one of those days" that the people in your squadron told you about. "What am I doing here?" you ask yourself as you realize you'd rather be just about anywhere else tonight.

Cold weather flying can be the most stressful and demanding you'll ever experience. At some point in your career you may find yourself flying out of Alaska or one of SAC's Northern Tier bases. It'll take a concerted crew effort to be safe and thorough when you have conditions like Minot AFB experienced in January 1986. The typical ambient air temperature was −26 degrees F with winds of 36 knots. That's about −80° with the wind chill factor! Balmy Grand Forks AFB has seen temperatures of −36°F with wind gusts of 63 knots in the October-November time frame.

PLANNING is the key if you intend to keep the weather from running your crew. Winter conditions affect almost every aspect of flying, from the speeds at which we taxi our airplanes to the speeds at which our reflexes react. Inevitably, everything takes longer when it's so cold, so right from the beginning give yourselves a little extra time. Mission planning will give you your first ideas about what you'll be up against, so start thinking about how you'll protect yourselves against that cold and wind. Life Support can give you several good pointers on how to combat the "insidious onset" of the cold — you'll find that, sometimes, just the winter flying jacket by itself won't be enough!

OK, so you've bundled up and loaded your pubs and gear, and you and your crew climb into the crew bus. The bus driver explains that his heater is broken, so you curl up and grumble all the way over to base operations. Your optimism keeps fading as the weather shop gives you a forecast that's not looking good. Snow is blowing across the runway, and conditions are starting to deteriorate. Chances are, if you take off, you probably won't be landing back here tonight. This happens more than you'd think in the North during the winter. Now you know that the chances of a divert are very real, and you really wish that you'd packed a little "divert bag" like the ones you've seen some of the "old heads" carry. It's nice to have when your operating base is buried in snow and you're stuck out for a day or two. The common wisdom is, if you bring it, you'll come home; if you don't, you'll probably end up diverting — without your checkbook! Oh well, at least you should get something warm into your stomach to try to get the body temperature and morale up. Make sure you check with maintenance on the status of your aircraft. No use going out if you're just going to sit on that cold bus. Request a BT 400 heater to warm up the aircraft. If the plane's at ambient temperature, it'll be an icebox when you get there. Talk to the SOF to see if he anticipates the need to de-ice the aircraft. One last thought before you leave: if you're taking passengers, leave them inside until you're ready to start engines.

Once you've arrived at "Ice Station Zebra," you'll find a challenging preflight waiting for you. You may want to direct your crew chief to get the start cart running five minutes before engine start to get the start manifold heated. Be compassionate: let the ground crew know you don't expect them to stand outside until engine start time. If they don't have anything to accomplish, have them get inside a heated truck or bring them inside the aircraft. We're all in this together.

Now that everyone knows the game plan, you're ready to preflight.

Aircraft commanders, your job is the toughest because it has to be done out in the elements. Remember, the flight manual covers a lot of extra information on cold weather procedures that you'll have to consider on your walkaround. You'll have to fight off the temptation to give her the old "two, four, and ten" tanker preflight. Pull on your winter hat and gloves, for about 85% of your total heat loss will come from your head. Your fingers, though, will tend to be the first part of your body to freeze. Frostbite is bad enough, but even worse is to slap cold metal with that warm hand and find you've frozen to it! Now take a long look at the aircraft. Inspect each control surface and make sure it's clear of ice and snow. Have the crew chief make sure he'll be able to remove the chocks. You can see that there are a lot of potential "gotchas" on the exterior inspection.

Inside, get that heater going! Don't direct the hot air hose onto an equipment rack, but you should be able to keep the cabin warm enough so that you can peel off layers of clothing as you work through your checklists. The crew chiefs should have the heater positioned between the ladder and the bottom of the crew entry chute on the KC-135 to allow a mixture of fresh and heated air. Of course, once that heat is removed — which should be just before engine start — you'll cool off again in a hurry. Copilots, the first thing you should do upstairs is a quick HEFOE check. Make sure the hydraulics are properly serviced, check the battery voltage and charge, and check the fuel panel and oxygen quantity. You'll want to get to work on problems early to avoid delays. Navs, before you get on board, make sure the Doppler antenna on the underside of the aircraft is free of ice and snow, or you could get inaccurate ground speed and drift indications inflight. The INS will take about 35-40 minutes to complete a full ground alignment. Give the radar a few extra minutes. After about seven minutes, the APN-59 should be providing accurate meter readings and range checks above 50/10. If it hasn't had enough time to warm up, you could easily blow the main receiver — transmitter fuse. Some tips for engine start and taxi:

Give the brakes a few quick pumps to bleed any air which may be trapped in the system.

Watch for high fuel flow on start, which could indicate a frozen fuel control unit. You may need to drop some cowlings and direct hot air onto the unit itself.

Oil pressure indications on the J-57 engines may start out very high, but they should come down as the engines warm up. If it's below −22 degrees F, don't change the throttle position for two minutes after engine start.

Don't hurry to get those generators on line. Make sure voltages and frequencies are steady. A technique many of us use is to wait five minutes when it's below freezing outside, so for most of the winter, tankers start engines in a 1-2-3-4 sequence.

If you need to use one engine to start the others, be careful of the EPR setting; 90-95% could easily exceed dry TRT. You should advance the throttle just enough to close the surge bleed valve; the crew chief can tell you when it closes.

Keep those taxi speeds down! Slipping and sliding can happen very easily with the low RCRs you'll see. Differential power and braking may be needed to aid nosewheel steering. Know where those taxi lines are at all times. Get a marshaller or a plow if you need one. Don't forget about seasonal obstacles like snowbanks.

Check for sluggish instruments and if you have enough room steer in both directions to keep the hydraulic fluid flowing through the steering cylinders. Move your flight controls frequently to check freedom of movement.

Get a thorough last chance from your buddy, the SOF, before takeoff. No takeoffs allowed with any accumulation of ice or snow on the aircraft.

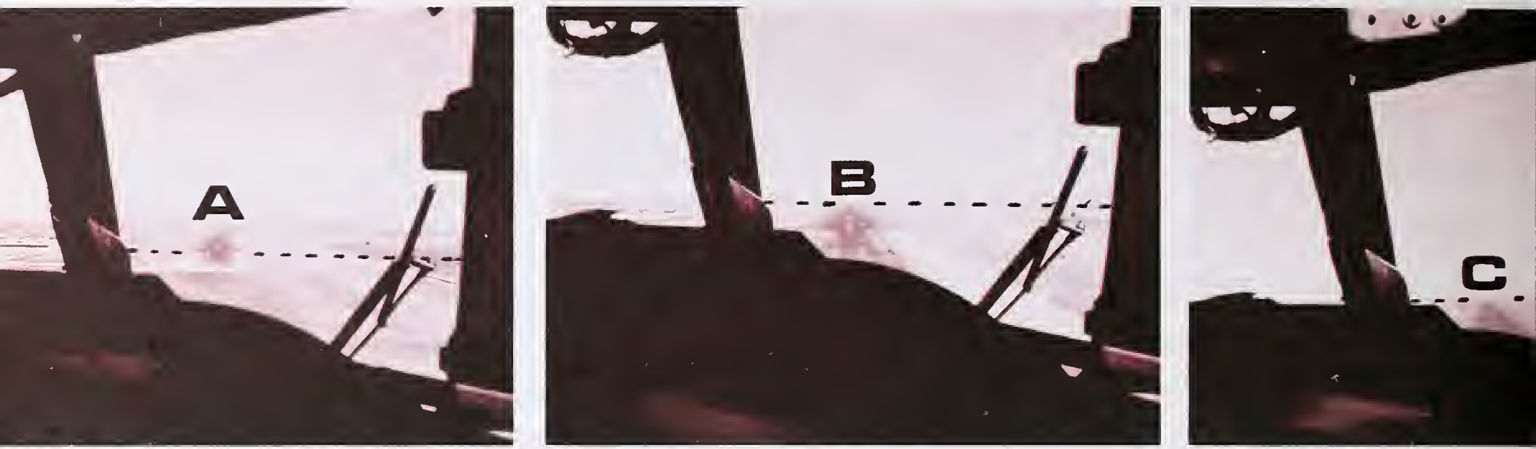
So you've made it to the hold line with a few minutes to spare. Think about what you'll be facing on the runway. Update the takeoff data, paying close attention to RSC and RCR values. Consider the possible effects of the severe temperature inversions you might see in the winter. A thirty or forty degree inversion at 1000′ AGL can get your attention. How does the runway look? The plows may be having trouble keeping it clear. Having one plow clear the centerline just before takeoff may be the best you can expect, but a ten or fifteen foot plowed path may not be enough in case of an abort. The KC-135 can expect deviation of up to 25 feet from centerline with an engine failure. (Note: Ensure the plow has exited the runway!) You might be able to increase the steering capability by configuring for a forward C.G. of about 23%.

With all this behind you, you're ready for the real fun to begin. Are you ready for an honest-to-goodness instrument takeoff? How about hours of holding, or that dreaded divert? When's the last time you've flown an approach down to a 200′ DH with an RVR of less than 3000′? Then if you do get it down, you've got to consider a hydroplane or an extremely long stopping distance. The first time these things occur to you shouldn't be as you line up and push up the power . . .

Sooner or later, the frigid winter will be a part of your flying experience. With knowledge of its effects, knowledge of your aircraft, planning, and good old common sense, you'll be able to do it safely and effectively: just like we do it up here!

From L-R: Capt Rich Stone, AC; Capt Fornarotto, CP; SrA Eric Lomascolo, BO; 1Lt Chris Fromdahl, N

Besides the harsh winters of Minot AFB they experience, Crew R-109 was deployed to the Alaskan Tanker Force in January 1985.



B-52 Landin

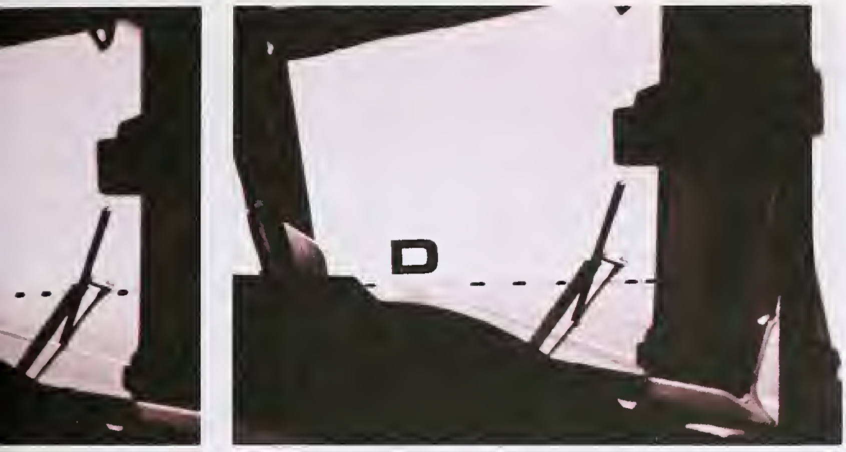
Maj John F. Shaw Van
B-52 IP, SAC CFIC
Castle AFB

Most B-52 pilots have had problems establishing the proper attitude for landing at one point or another in their flying career. The problem is not limited to the young copilot going through CCTS at Castle. It can happen to a brand new left seater or even to the experienced "old head" with thousands of hours in the aircraft. For this reason, the "Landing Attitude Demonstration" (PO88) is now a proficiency item for all B-52 instructor pilot upgrades. In this article we will discuss the procedures to follow when performing this demonstration as well as techniques we have found useful in visually establishing the landing attitude.

Before discussing procedures to be used inflight, an explanation of the touchdown speed zone is in order. This speed zone is a range between simultaneous touchdown speed, which can be thought of as the maximum touchdown speed, which is the minimum recommended flying speed in level flight. It should be noted that for any gross weight, simultaneous touchdown speed changes with airbrake position while minimum touchdown speed remains constant.

Now for our demonstration. We will attempt to fly a target speed midway between the maximum and minimum touchdown speeds to allow the student to visually identify the proper landing attitude. To determine this target speed for a 250,000 pound aircraft we can refer to section VI of the Dash-11 and see that simultaneous touchdown speed is 125 knots and minimum touchdown speed is 115 knots. Our target speed is therefore 120 knots. Note that this speed is 10 knots below our best flare speed of 130 knots. Best flare minus 10 knots, then, is a target speed which will work for all traffic pattern touch and go weights.

Having computed our target speed and reviewed SACR 51-52, Chapter 6 restrictions, we are now ready to perform the "Landing Attitude Demonstration." The maneuver can be accomplished from either a visual or instrument approach. Reduce power, trim and flare normally. The secret to a successful landing attitude demon-



LANDING SEQUENCE

Photo A shows the B-52 approaching the overrun with the fixed distance markers as the impact (1000 ft from threshold). Notice WRP. **Photo B** shows initial roundout to place aircraft level above the runway. The WRP used on final is placed on horizon which is our new impact point. **Photo C** illustrates that if we continue to use the horizon as our impact point, our WRP begins to shift down the windscreen as we decelerate. **Photo D** shows us in the landing attitude. Because seat position and sitting height may alter this picture slightly, the "Landing Attitude Demonstration" will allow each pilot to see the proper landing attitude picture for himself. Remember, from initial roundout to touchdown, do whatever is required to **impact the horizon.**

g Attitude Demonstration

stration is to plan to land the aircraft, otherwise there is a distinct tendency to carry too much power and end up with too much airspeed. Once in the flare, cross-check the airspeed when the landing attitude is established. As the target speed is approached, add power to maintain the target speed in level flight. Remember, maintaining this target speed in level flight automatically places the aircraft in the proper landing attitude. As a guide, the power to maintain this target speed in ground effect approximates the power setting on final approach. If the aircraft is high, correct back to the runway by reducing power and easing out back pressure, then reestablish the proper attitude and airspeed by reapplying power and back stick. Continue the demonstration until halfway down the runway while directing the student to look at the horizon with respect to the windscreen. It is quite possible that during this demonstration a touchdown or skip may occur. Brief the student, therefore, that this merely confirms the aircraft's proximity to the proper landing attitude and height above the runway. Brief him also that touch-and-go procedures will not be used for the go around unless a complete touchdown on both fore and aft trucks occurs. Terminate the demonstration when halfway down the runway by adding go around power, lowering the airbrakes and when assured no touchdown will occur, retracting the gear.

Having demonstrated the landing attitude, emphasize the relationship between airspeed and the visual picture (i.e. horizon, windscreen, and glareshield). One technique helpful in consistently attaining the proper landing attitude is to use the horizon as an impact/aim point. In other words, once established in the flare think of doing whatever is required to impact the horizon. Establishing the horizon as an impact point begins with the initial portion of the landing flare. At this point, we will place the windscreen reference point (WRP) used during final approach on the horizon. The WRP is a point on the aircraft windscreen where our impact/aim point remains constant for a given airspeed. On final, the WRP is defined by the fixed distance markers. In the flare, the WRP is now defined by the horizon. While the WRP used on final may be used initially during the roundout, it is important to recall that it will remain constant only with constant IAS. With decreasing airspeed in the flare, the result will be a WRP that shifts down towards the glareshield **(see photos).** If we can convey the idea of trying to impact the horizon, we should be able to eliminate the nose gear landing or the ballooned landing which results from trying to establish the landing attitude with excessive airspeed.

The "Landing Attitude Demonstration" combined with this technique can be invaluable in curing landing problems. It takes practice to accomplish the demonstration consistently well, but is well worth the effort. **Good luck, and FLY THE AIRCRAFT.**

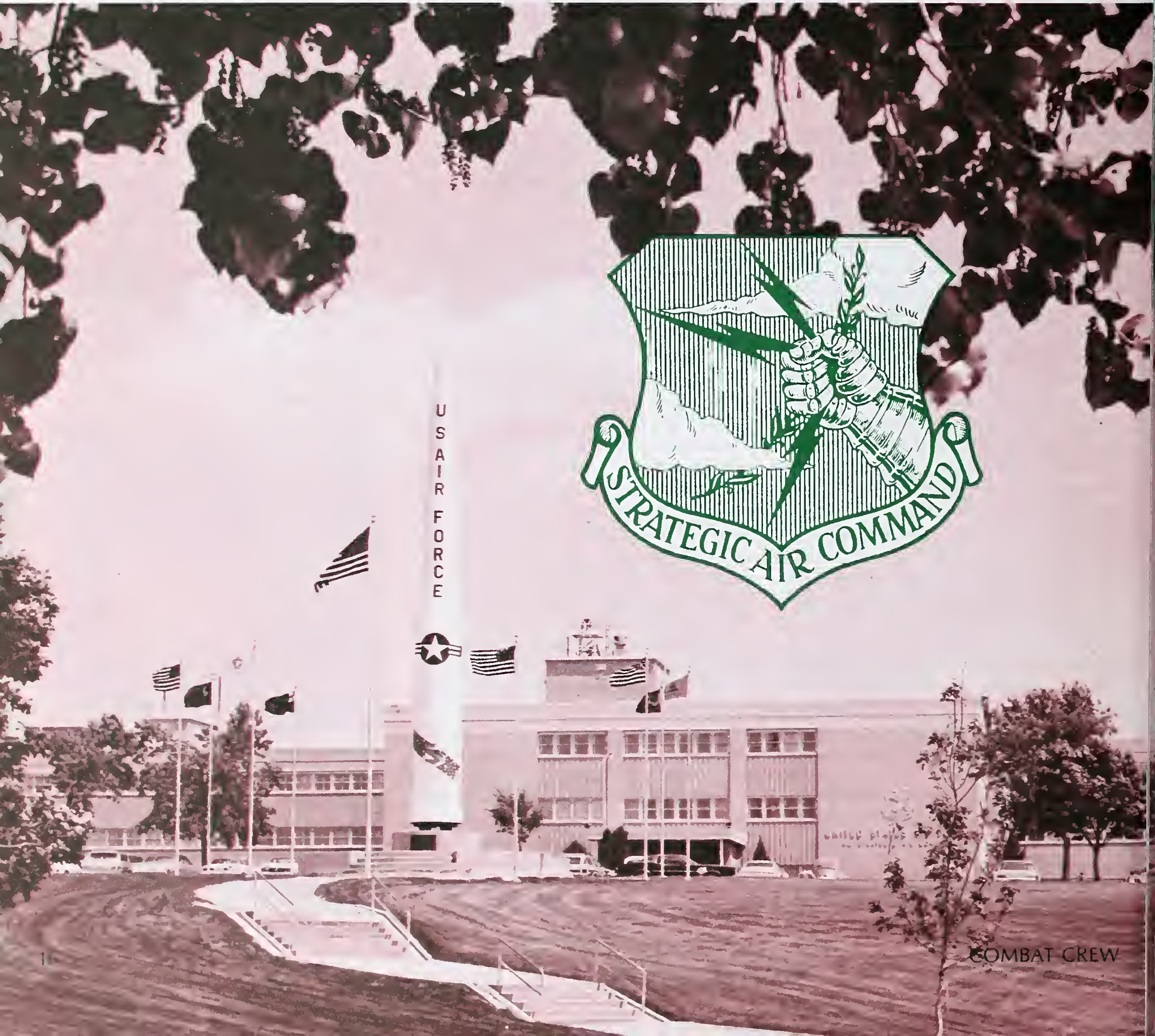
About the author. Maj Shaw Van graduated from the Citadel in 1974 with a degree in Mathematics. He has been stationed at Wurtsmith, Mather and Castle Air Force Bases and has flown over 3700 hours. He is currently assigned as a B-52 IP with SAC's Central Flight Instructor Course, Castle AFB.

The SAC SPOTLIGHT Program, similar to the Air Staff Training (ASTRA) Program, existed from the early to late 1970s. SPOTLIGHT has recently been revitalized and reimplemented in SAC to provide outstanding, young officers the opportunity to improve their professional skills in the challenging Headquarters SAC staff arena. It's a forward looking approach that will enhance individual career development and provide long-term benefits to the command and the Air Force.

Normally, junior officers don't have the chance to perform at the SAC staff level until they've reached senior captain or field grade rank. Now, the SAC SPOTLIGHT Program will annually bring ten of the command's brightest captains to Omaha, Nebraska, for a one year headquarters tour. In most cases, SPOTLIGHT officers will then return to the field to use and share their new experience. Some may be considered for a tour extension or follow-on assignment within the headquarters.

SPOTLIGHT RETURNS

Maj John P. Priecko
Chief, Selective Assignments/Special Activities
HQ SAC/DPROC



ELIGIBILITY CRITERIA

- **ALL OFFICERS**
  - **Must be volunteers in regular or indefinite reserve status with overall outstanding records indicating substantial potential**
  - **Must be a captain or captain selectee with effective date of rank prior to 30 June of the fiscal year of entry to SPOTLIGHT**
  - **Must have no less than four and no more than eight years of total active federal commissioned service as of 30 June of the fiscal year of entry into SPOTLIGHT**
  - **If serving overseas, must not require a date of rotation from overseas (DEROS) curtailment to meet the SPOTLIGHT reporting date**

- **RATED OFFICERS**
  - **Must have a minimum of 36 months of aviation service as of 30 June of the desired assignment year**
  - **Officers with less than 72 months of operational flying time will return to rated duties at SPOTLIGHT tour completion**

Each year, wing commanders may nominate three individuals. These nominations will be forwarded through air division and numbered air force commanders to reach HQ SAC by 1 Feb. Selective Assignments and Special Activities (HQ SAC/DPROC), the office of primary responsibility for SPOTLIGHT, will then review each candidate's records to confirm eligibility and availability for reassignment.

A central selection board will convene at Offutt in mid-February. The board, composed of colonels from participating organizations, will screen nominees' command selection folders, officer personnel briefs, and AF Forms 90. Board members will take a "whole person" approach in reviewing duty performance, career progression, professional military and academic education, with emphasis on the officer's potential.

Inclusive tour dates are 1 July through 30 June. The selection board will determine individual organization of assignment based on duty history, career progression, academic education, AF Form 90 preferences, and needs of the command and Air Force.

So how do you get singled out for this exceptional opportunity? First, you must meet the eligibility criteria; but equally important, you must be the very best at what you do (copilot, maintenance officer, missile combat crew commander, whatever . . .). Additionally, communicate your interest to both your squadron commander and the personnel system. We can't overemphasize the importance of an AF Form 90 that reflects your current personal desires.

Obviously, only the best, most qualified will be selected to participate in this high visibility program. Simply put, we're looking for a few "oustanding" officers. Why shouldn't you be one of the first? Have any questions or want to know more . . . call HQ SAC/DPROC, AUTOVON 271-6652/3561.

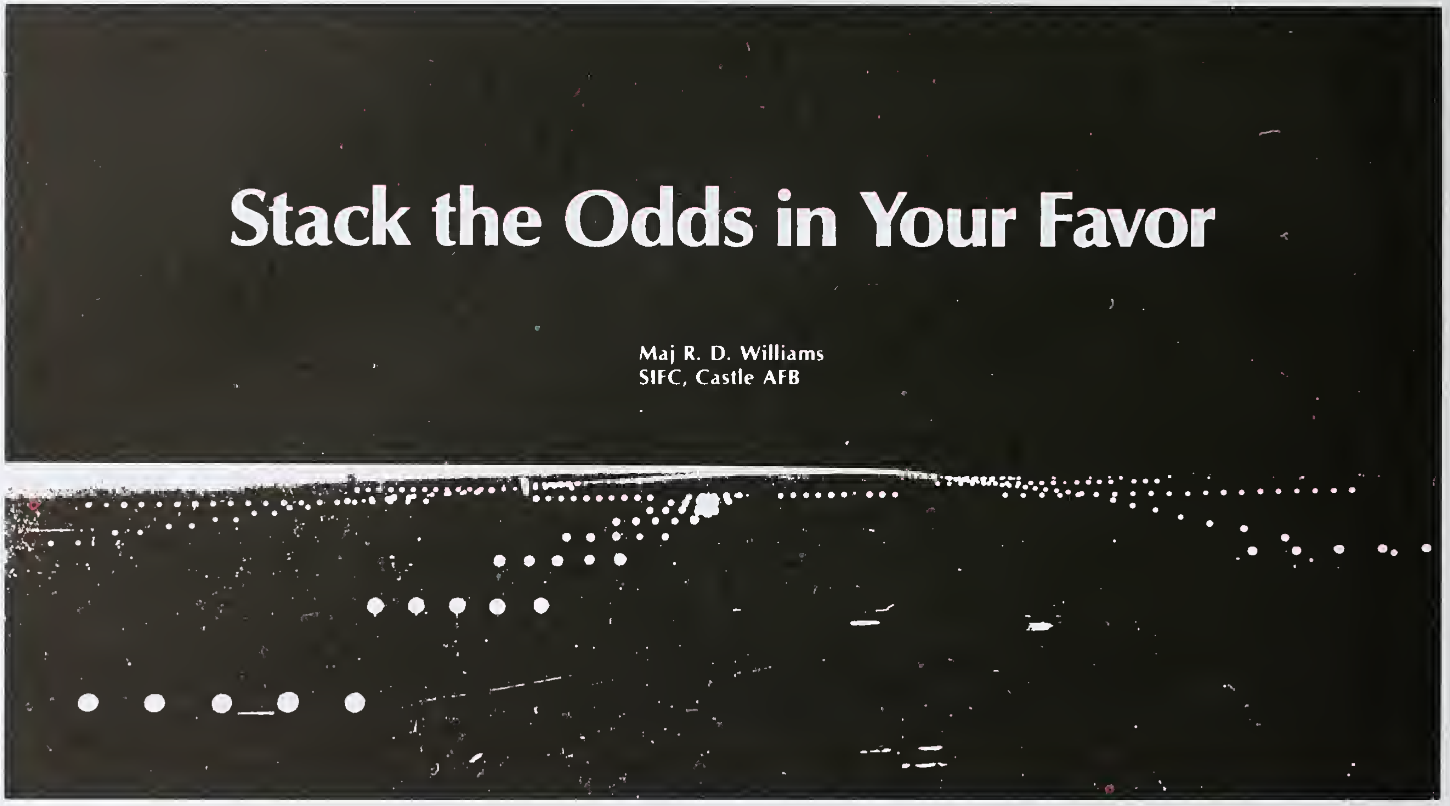
SPOTLIGHT POSITIONS

HQ SAC ORGANIZATION	NUMBER
Comptroller (AC)	1
Operations (DO)	2
Personnel (DP)	1
Inspector General (IG)	1
Intelligence (IN)	1
Logistics (LG)	1
Strategic Planning/Analysis (XO)	1
Plans (XP)	2

The Low Vis Landing —

Stack the Odds in Your Favor

Maj R. D. Williams
SIFC, Castle AFB



Low visibility landings have proven to be inherently dangerous over the years, especially so during that particular segment of the approach when pilots must transition from their **instruments** and land the aircraft **visually.** Statistically, the approach and landing phase of flight accounts for around 50% of all aircraft accidents. And not surprising, most of these accidents occur during marginal weather conditions. In 1975, to better understand why such a disproportionate share of accidents occur during the approach and landing phase, the National Transportation Safety Board (NTSB) conducted a special study of weather related accidents. After examining the factors involved in 17 approach and landing accidents and incidents between 1970 and 1975, the NTSB concludes that:

(1) The major hazard was not the height of the ceiling, but restrictions to visibility.
(2) Almost every mishap occurred after someone on the flight crew had seen the ground, the airport, or the runway environment.
(3) In almost every case, the visual segment of the approach was conducted in meteorological conditions that affected visibility, and the pilots were apparently unable to correctly assess the flight path or descent angle during the visual segment of the approach.

Thirteen of the mishaps occurred because the pilot landed short of the runway. The probable causes of the mishaps varied; however, in all but one of the mishaps, the flight crews failed to adhere to prescribed crew coordination procedures, failed to cross-check flight instruments, and/or attempted to land with inadequate or marginal visual cues. One might deduce that a good number of the unfortunate pilots must have had the mistaken impression that having only the approach lights in sight gives a pilot the capability to visually fly their aircraft to the runway and land. **NOTHING COULD BE FURTHER FROM THE TRUTH!!** Having "a visual" on the approach lights will allow you to continue the approach; but it is not enough to "go visual" and land the aircraft.

I'm sure you're saying that since we can't fly to those "airline minimums," such accidents are not likely to occur in SAC. Don't be too sure! Sixteen of the referenced mishaps occurred in weather conditions above SAC minimums (2400 RVR), and 12 of the mishaps occurred above "field grade" instrument minimums (better than 300-1)! Can you think of any approach/landing accidents that have occurred in SAC during marginal weather? If not, talk to someone who has been around awhile. One of the primary reasons SAC mandated SIFC was to reverse the trend in instrument related mishaps.

The remainder of this article is an attempt to set some rational limits on a pilot's decision-making process during a critical phase of flight. It's offered in the hopes that it prevents some pilot from blindly trusting his eyes in conditions they weren't designed for.

OK — YOU GOT MY ATTENTION, SO WHERE'S THE BEEF?

One of the best ways to prevent yourself from becoming a statistic is to follow the boy scout motto, **"BE PREPARED."** Some of the questions you should be able to answer include: What can I expect to see at DH or MDA? How far below DH/MDA can I descend using the definition of runway environment and still be safe? When should I safely transition to visual references? What crew coordination procedures have I developed with the crew (who flies the approach, who lands, who monitors the gauges, and what calls do I want to hear)? If you and your crew have positive answers to these questions you have stacked the odds in your favor. If you don't have all the answers, you had best read on.

WHAT WILL I SEE AT MINIMUMS?

It depends (the standard SIFC answer to instrument questions)! If you are flying an ILS with a three-degree glideslope and the reported visibility is one-half mile (2400 RVR), theoretically you should be able to see the approach lights up to 400 feet short of the runway (Fig. 1). The problem is that in many cases slant range visibility is considerably less than ground visibility and/or the visibility in the approach zone may be less than the prevailing visibility. In conditions of fog (especially shallow fog), the reported RVR (or PV) may not be a true representation of what you will see on the approach or on various segments of the runway. RVR is only an accurate representation for the approach zone and total runway in homogeneous weather conditions.

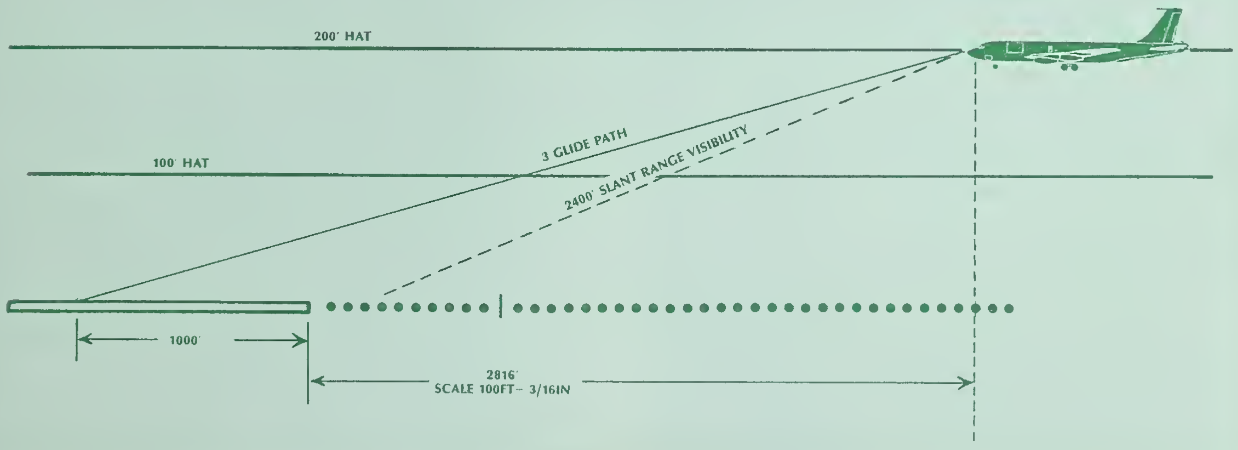
The bottom line is that with a reported RVR of 2400 feet (or with any obstructions to visibility), expect the unexpected. You might not see anything until the DH or you might have the runway (and/or approach lights) from the FAF all the way down to 100 feet and suddenly find yourself seeing nothing but murk — time for a go around! This leads us to the next question.

HOW FAR SHOULD I GO?

Ann Landers hasn't covered this subject adequately; so let's take another look. Our bible (AFR 60-16) tells us not to continue the approach below the MDA/DH unless the aircraft is in a position to make a normal approach and landing; and the runway threshold, approach lights, or other markings identifiable with the approach end of the runway are clearly visible to the pilot. The grouping of runway threshold, approach lights and other markings (touchdown zone markings, touchdown zone lighting, runway lighting, VASI, etc.) is commonly called the runway environment, and will be referred to as such throughout the remainder of the article.

Unfortunately, little guidance has been provided on just how far one should continue based on seeing part of the runway environment (only the approach lights). Additionally, nowhere does it tell us with clear-cut finality what cues/references are necessary to transition to a visual glidepath and landing. Ironically, this critical area of flight requires continual judgmental decisions while traveling in excess of 240 ft/sec toward the runway. There's lots of room for interpretation and a pilot must use "good judgment" in determining

FIGURE 1



THE LOW VIS LANDING . . .

if, when, and how far he can safely continue an instrument approach. If you land safely, little if anything is ever said; but woe be unto the pilot who clips an approach light stanchion.

As might be expected, in the "Landing from the Instrument Approach" class at SIFC, I have found a wide range of ideas on just what is necessary to continue an approach once DH is reached. They range from going missed approach if the runway is not in sight at DH, to continuing right on down, based on seeing the approach lights (or in some cases, roads, buildings or the "Golden Arches" — obviously incorrect).

Before any insight into continuing the approach below MDA/DH can be discussed, it is necessary that three very important areas be covered: "Decision Height," "visual references," and the criticality of "a stabilized aircraft."

(1) In SAC, the minimum DH is 200 feet (or higher, if so published); and is defined as "the height at which a decision must be made to either CONTINUE THE APPROACH or to GO MISSED APPROACH." It is not a decision to land or go missed approach. If the runway environment is in sight at DH the approach may be continued; however, the pilot must evaluate right down to touchdown whether he can safely continue. Once below DH if visual contact with the runway environment is lost (or the aircraft is not in a position to safely continue to landing), an immediate go around must be initiated.

(2) To safety fly a visual descent and landing, it is necessary for the pilot to be able to determine the approach angle (visual glide path) and to see the touchdown area at some point on the approach. Although this is probably not "earth shattering" information, many pilots have not placed it in the proper context when dealing with low visibility approaches (if they had, the approach light stanchion repair business would be bankrupted). To determine the proper approach angle (usually 2½-3 degrees) it is necessary to be able to see the horizon or to mentally picture the horizon by projecting the runway edges. It has been hypothesized that a pilot may be able to project the horizon with a minimum of 500 feet of runway visible. The proper glide path is maintained by noting the extent to which the touchdown point (usually the fixed distance markers) is depressed below the horizon. This depression remains constant as the aircraft descends, providing the angle to the runway does not change. Unless you are into "blind" landings (a maneuver best left to the autopilot on Category III ILS approaches), you must be able to see a good portion of the touchdown zone in order to visually land the aircraft. Normally, if visibility is sufficient to determine the visual glidepath, there will be enough of the touchdown zone in view to provide the necessary references.

(3) The average time to identify, decide and react to stimuli is four seconds. It is imperative that the aircraft be in stabilized flight — on glidepath (within 1 dot), on centerline (within ¼ dot) on airspeed and trimmed for such at DH. AFM 51-37 requires an immediate missed approach if GSI deflection exceeds a 1 dot fly up command once below the localizer MDA. Although ¼ dot seems to be a tight tolerance for the localizer, this translates to 43 feet off centerline. Corrections to the glidepath and/or centerline when greater deviations occur destabilize the aircraft and are at best difficult when visibility is limited. Any attempt to depart DH in other than stabilized flight may very likely lead to a major aircraft accident! If you are not flying a stable platform, or the aircraft becomes destabilized, you should be going around!!

In a nutshell, "seeing" only the approach lights at DH allows you to continue the approach, but it's not enough to "go visual." Remember, approach lights alone do not provide vertical guidance. Any attempt to totally "go visual," whether above or below DH/MDA, without adequate visual references (runway threshold and part of the touchdown zone in sight) will most likely lead to disaster. A transition to visual references requires you to be able to judge the visual glidepath angle and to "see" the touchdown point/zone.

If you can't see the touchdown point and/or can't judge the glidepath angle upon reaching the MDA/DH, you must use composite flight (both the instruments and visual references) to continue the approach. This means you must use the attitude indicator, VVI and the electronic glide slope (ILS/PAR) to detect deviations until such time that adequate visual references are available to safely transition to a visual glidepath and landing. But how far should I continue an approach based only upon seeing the approach lights?

For nonprecision approaches, a descent below the MDA without the touchdown zone in sight is at best a speculative venture. The SIFC "best bet" is do not depart the MDA on a nonprecision approach unless at least 1000 feet of runway is visible. Once departing the MDA, if conditions do not continue to improve, a go around is in order.

For precision approaches there is no simple answer. Trying to put a tangible figure on how far to continue below DH using composite flight is difficult. The answer really boils down to "pilot judgment"; however, I will attempt to provide you with some "ammunition" on the subject. Let's take a look at just what you can expect to see out the front windscreen as an approach is continued below DH.

At an approach speed of 142 knots, the aircraft is traveling at 240 ft/sec. On a three-degree glidepath with a 200 foot DH, it takes about 16 seconds to travel from DH to the touchdown point (fixed distance markers). Based on these figures, the aircraft is 3816 feet from touchdown and 2816 feet from the runway threshold at DH. If the slant range visibility (SRV) is 2400 feet, you will not see the runway nor the red termination bar on the ALSF-1 approach light system at DH. The runway threshold should appear about two seconds after passing DH, and the fixed distance markers about four seconds after seeing the threshold. At DH + six seconds you will be 1376 feet from the threshold and 125 feet AGL. This means you would have to use composite flight for three to six seconds after passing DH.

The point at which you "see" the threshold and touchdown point in the above scenario is based upon a 2400 foot SRV. As we all know though, the SRV can be considerably less than the reported RVR and/or prevailing visibility. If the SRV is 1600 feet in the above example, the threshold of the runway will not come into view until DH + five seconds and the fixed distance markers for another four seconds or DH + nine seconds. At DH + nine seconds you will be 650 feet from the threshold and 87 feet AGL. You would now have to use composite flight for six to nine seconds.

As mentioned earlier, however, a minimum of 500 feet of visible runway might be sufficient to judge a visual glidepath because the pilot should be able to project the horizon. With the 1600 SRV scenario, you will see the first 500 feet of runway at DH + seven seconds, be 1700 feet from touchdown and 110 feet AGL. Five hundred feet is an absolute minimum and a figure of 700 to 1000 feet of visible runway would be a smarter choice.

Using the above figures and an actual visibility of 2400 feet on the runway, continuing an approach longer than six to seven seconds after DH without at least 700 to 1000 feet of the touchdown zone coming into view is starting to press the limit. If the majority of the touchdown zone is not in view by this time (six to seven seconds), chances are that visibility will be insufficient to land.

We are not advocating you "hack the clock" at DH; but rather to show that it's a matter of a few seconds before you should see the runway or go around. Your decision to continue an approach below DH/MDA is a conditional decision based upon the premise that as long as the present situation remains the same or improves, the landing can be safely completed. If conditions start to deteriorate and/or things don't look right, an immediate go around would be the wise choice.

Regardless of the type of approach, attempting a visual glidepath without adequate visual references translates to a good chance of landing in the approach lights. To detect deviations to a normal glidepath, composite flight must be utilized. It is imperative that a continual crosscheck of the instruments be made until touchdown.

Next month, I will take a look at some crew coordination procedures to most effectively fly using composite flight.

About the author. Maj Williams has been assigned to SIFC since its inception in 1982. Before flying KC-135s, he was a T-38 IP. He has logged 4300+ hours (3100 IP), holds an ATP, CFI SEME and CFII.

PROFESSIONAL PERFORMERS

Flying Crew

On 5 March 1986, Capt Marc D. Felman, 68 AREFG, Seymour Johnson AFB, NC, commanded a flight of two KC-10s on an operational deployment of six Marine A-4Ms to Lajes, Azores. Other members of the crew included Capt Thomas M. Ferguson, copilot; MSgt Clarence Bridges and TSgt Gene Bouler, flight engineers; and MSgts Gerald G. Treadwell and Patrick S. Kennedy, boom operators.

Rapidly deteriorating weather at Lajes required diversion to Santa Maria AB, Azores. The A-4Ms were not equipped with ILS, so the KC-10 crew flew three precision ILS approaches to allow the A-4Ms to safely recover at Santa Maria.

After landing, MSgts Treadwell and Kennedy prepared the aircraft for refueling and for launch as a possible strip alert tanker for the following cell. MSgt Bridges and TSgt Bouler computed upload fuel requirements and calculated critical takeoff and flight data.

Shortly afterward, an A-4M from the second cell experienced a sheared strut on the approach end of the runway. Although the fighter was disabled, the pilot did not suffer any injuries. Because of poor visibility, the A-4's emergency was unknown to the tower; however, the KC-10 was parked on a refueling pit only 3500 feet from the runway allowing its crew to witness the mishap. Immediately Capt Felman directed crash equipment to the disabled aircraft while Capt Ferguson notified the airborne KC-10 of the runway closure.

Flying Crew of the Month (L-R): TSgt Gene Bouler, Capt Thomas Ferguson, Capt Marc Felman, MSgt Gerald Treadwell, MSgt Patrick Kennedy. Not present is MSgt Clarence Bridges.

With the weather deteriorating rapidly and a KC-10 and three fighters still airborne approaching minimum fuel, Capt Ferguson planned an inflight rendezvous and refueling with the airborne cell. Capt Felman launched his KC-10, performing an intersection takeoff. Within minutes of departure, the KC-10s rendezvoused and 50,000 pounds of fuel were offloaded. All five aircraft diverted safely to Rota AB, Spain. This superb feat of airmanship and teamwork demonstrates the qualities of an outstanding crew — discipline, initiative, ability and professionalism. The actions of Capt Felman and his crew clearly prevented the loss of four invaluable aircraft and potentially the lives of their crew members.

Aircraft Maintenance

SSgt David M. Wallace, 416 BMW, Griffiss AFB, is SAC's Maintenance Airman of the Month.

SSgt Wallace has proven repeatedly that he is an outstanding KC-135 crew chief. On three separate occasions he has taken a newly-transferred KC-135 and then spent many hours of overtime and countless weekends fixing and reconditioning the aircraft. Having advanced to flight chief status, he instills his infectious enthusiasm to his assigned crew chiefs. After volunteering to take over the marginally rated −21 equipment section, SSgt Wallace turned the section around, solving the accountability problems and clearing up the shortages and overages. During a recent SAC IG visit, the section was found error free. Always searching out excellence, SSgt Wallace again volunteered — this time for a flight chief's position in the tanker branch. Although this position is usually reserved for a master sergeant or above, SSgt Wallace assumed the position with his "can do" attitude and has performed flawlessly.

Missile Crew

Crew E-110, consisting of Capt Joseph A. Thibault, MCCC; 1Lt Frank Robertson, Jr., DMCCC, Sgt Kervie D. Combass, MSAT; and SSgt Kirk W. Hemphill, MFT; 308 SMW, Little Rock AFB, is SAC's Missile Crew of the Month.

Crew E-110 defused several potentially dangerous conditions and ensured safe operations under malfunction trouble analysis. The crew started their alert by demonstrating correct entry procedures for the SAC IG. At the same time they were being evaluated by standard evaluation personnel during an Olympic Play. They performed a test of the coded switch system and verified the readiness of the missile guidance switch system by performing a target select and verify procedure. Crew E-110 was then faced with a security alarm and several malfunctions. The crew accomplished the security alarm checklist and then initiated trouble analysis for an outage of the SAC automated command and control system. After correcting and restoring this vital communications link, the MFT discovered an insufficient air flow indicator lighted for battery supply one (BPS-1) indicating a lack of air to cool the batteries. The MFT quickly isolated the problem and returned the BPS-1 to normal operating status. Crew E-110 had discovered other problems such as transmitter faults and malfunctions on the facility power and control board. Once the crew corrected all the malfunctions they initiated their checklist for a missile launch verification. Both tests were performed flawlessly. Crew E-110's prompt actions and command and control exemplify the highest standards of the Strategic Air Command.

Missile Maintenance

SSgt David J. Cummings, 90th SMW Quality Assurance Division, F. E. Warren AFB, is SAC's ICBM Maintenance Man of the Month. Responsible for the transfer of the first nine launch and launch control facilities (LF and LCFs) from SAC to contractor in support of the Peacekeeper weapon system deployment, SSgt Cummings ensured proper equipment inventory, control, and disposition. He is a key member of the SAC Peacekeeper Weapon system Site Acceptance Team responsible for accomplishment of Class I and II demonstrations which determine if systems operate as advertised by the contractor. SSgt Cummings is the SAC rep for custodial transfer to contractor of LFs and LCFs in support of the Minuteman Life Extension (Rivet MILE) program and then the smooth transition back to SAC of these sites after completion by AFLC. He was instrumental in planning, organizing, and coordinating a system for the implementation of Rivet MILE by structuring AFLC, SAC, SATAF, and several civilian contractors into a single, dynamic working group. He has also identified mission critical problems and technical data deficiencies which keep these programs on schedule. One such accomplishment was the development of procedures and format for accomplishing Technical Acceptance Inspections for the transfer of facilities in support of the Rivet MILE program and the Peacekeeper weapon system deployment. These inspections accurately track deficiencies and provide a feedback loop to managers on facility status. This dedication to duty makes SSgt Cummings one of SAC's finest.

Munitions Maintenance

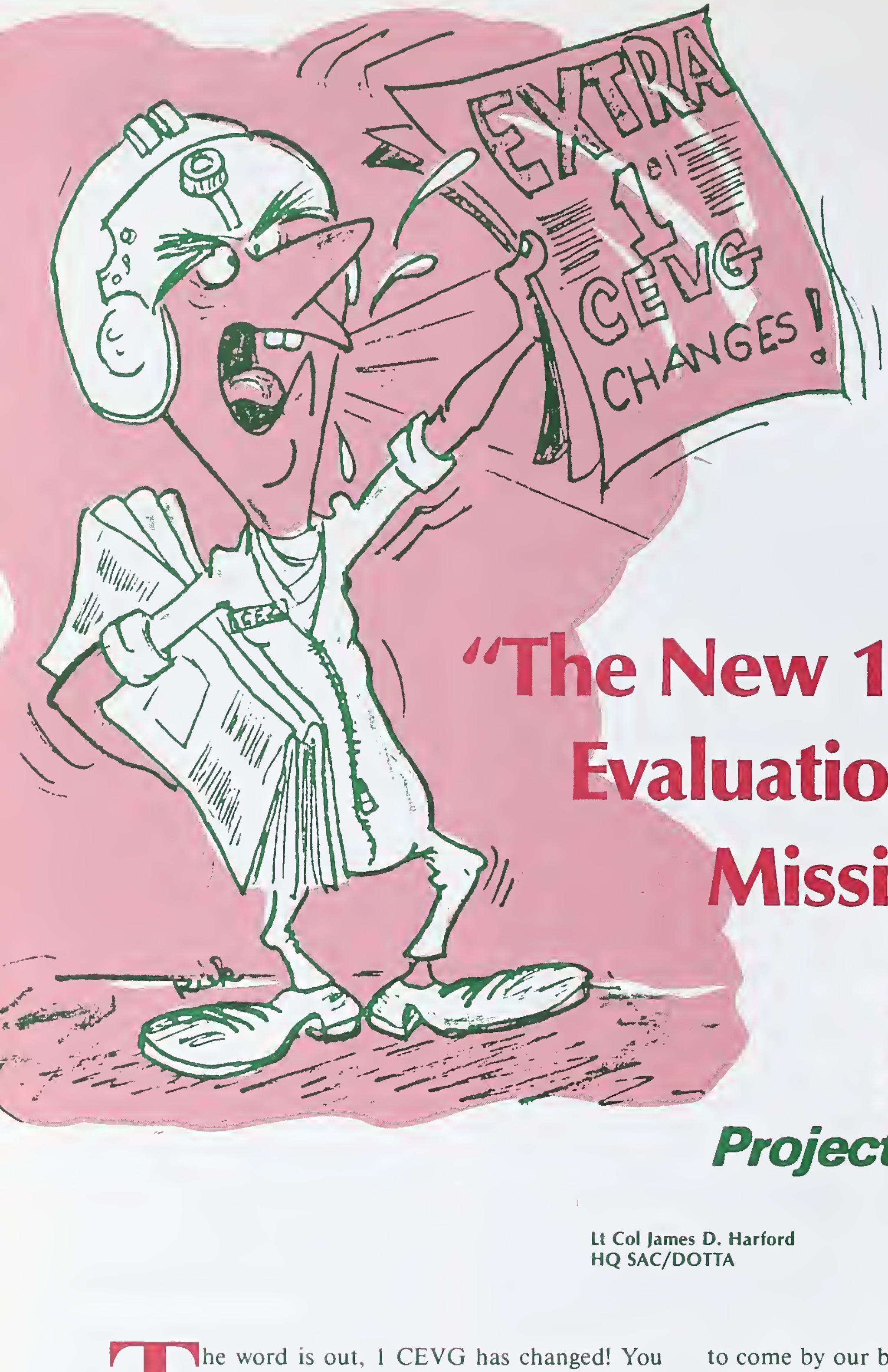
SSgt Reginald D. Mendez, 416 BMW, Griffiss AFB, is SAC's Munitions Airman of the Month.

Currently assigned as a missile systems maintenance team chief, SSgt Mendez supervises all aspects of maintenance on the ALCM, SRAM, and bomb release systems on board the B-52G aircraft. A recent distinguished graduate of NCO Leadership School, SSgt Mendez's teaching and leadership abilities are unequaled. The superb training program he developed has resulted in aggressive, competent and professional personnel, as evidenced by a recent MSET visit which rated the phase inspection program error free. Additionally, SSgt Mendez received zero defect ratings for every assigned task by MSET, QA evaluators, and the ORI team in the past year. His abilities as a technician were evident when a problem was encountered with the electrical connectors on the ALCM pylon adapters. Even with depot assistance, the estimated repair time was 16 to 32 hours per cable. Under SSgt Mendez's guidance, the repair time was cut to ten hours per cable and the entire project was completed a day and a half ahead of schedule.

Missile Crew

SSgt Cummings

SSgt Mendez



"The New 1st Combat Evaluation Group Mission"

Project Warrior

Lt Col James D. Harford
HQ SAC/DOTTA

The word is out, 1 CEVG has changed! You may have heard some rumors and be wondering what all this has to do with you. Well, I can tell you this "rumor" has everything to do with you. These changes affect how 1 CEVG will interact with all our units, and more importantly, you, whether you're on active duty, National Guard, or a Reserve crew member.

First, let's take a look at what's happened to the 1 CEVG mission. The job of those evaluators who used to come by our base and fly with about one-third of the aircrews and test everyone has taken on a different complexion. The old 1 CEVG/ST has been split into two different and separate functions. Approximately one-third of 1 CEVG's current resources will become the command evaluation team (EV) and the other two-thirds will become the command standardization team (ST). This enhancement of the 1 CEVG mission is directly tied to improving the command's total standardization effort with an eye to tactics, training and improved evaluation.

The evaluation team (EV), as it's been restructured, will visit each unit at least once every 24 months. The current 90 day notification procedures remain in effect. The primary job of this team is to certify the Stan/Eval function, and as such fly with one Stan/Eval crew from each type aircraft assigned. One other Stan/Eval crew from each aircraft will receive an evaluation in the appropriate training device. Additionally, the EV team will fly with one crew composed of staff instructors (Training level B). This would normally involve all of training flight. One feature that some of you may have noted is the 1 CEVG/EV team will not fly with any numbered crews other than the Stan/Eval crews. However, all available aircrews and instructors will continue to receive emergency procedure tests and AF Forms 8 are generated as required for testing and evaluations. The Stan/Eval organization will continue to receive an administrative inspection in the same areas as before with the addition of an "over the shoulder" evaluation of one Stan/Eval crew from each assigned aircraft while performing an evaluation in the training device.

Another feature that is a departure from past practices deserves highlighting. The unit receives no rating. The old "Outstanding" through "Unsatisfactory" rating system has been eliminated. The wing/group commander receives a copy of the results and only raw evaluation data is forwarded to the NAF and SAC headquarters. SACR 60-4, Vol I, Standardization/Evaluation Program, is being totally revised to reflect all these changes and should be in your hands by January 1987. 1 CEVG is using the new procedures on all current EV visits and will explain the ground rules in the visit notification message until SACR 60-4, Vol I is revised. The 1 CEVG/EV division will continue to maintain its present technical order responsibilities in its function as the "SAC Stan/Eval."

Now let's look at the ST team. This group is standardization and training oriented and encompasses the remaining two-thirds of the old 1 CEVG authorizations. The team visits the unit every two years on alternate years from the evaluation team and forms the basis of the command's new training direction — training the whole crew in the complete mission. This team also helps bring tactics training to life.

This visit is accomplished as a team concept and is procedures and tactics oriented to standardize the unit and command training program. The ST team visit will last approximately ten days and will present new and/or review current procedures, tactics, and techniques to the unit training cadre.

> **"First Combat Evaluation Group's mission has indeed changed — it is significantly broadened and, even more than in the past, encompasses the full meaning of standardization."**

During the visit the ST team will present tactics seminars with the unit DOJT acting as host. The thrust of these seminars is to discuss SACR 3-1 volumes as applicable and gather suggestions for improved tactics, tactics training, and the 51-XXX series SAC regulations. Throughout the visit this team will work with the unit tactics experts and training device instructors to improve mission scenarios. This will be accomplished by observing training missions, reviewing the quality of current mission scenarios, and providing seminar opportunities for training device instructors.

A key feature of the ST team visit will be flying with the unit training cadre both in the air and in the training device to teach tactics and improve the unit instrument program if needed. The goal of this effort is to demonstrate to our instructors that valid mission instruction cannot be accomplished unless it's executed in a tactics context.

Throughout the entire visit a lot of attention will be given to standardizing unit training programs and obtaining training and tactics ideas for the entire command. As such, the team is not evaluating. There are no Forms 8, no ratings, and no fault is assigned. This group is really there to help you. A privileged report on unit training is provided to the wing/group commander, but no rating is given to outside agencies. The ST team compiles data from all its units and provides a quarterly summary report on lessons learned and actions required to help improve the command tactics and training program. Eventually, the ST teams will be located at the new Strategic Warfare Center and form an essential element of our tactics and tactics training initiatives.

On 6 Oct 86, the first of the new ST teams provided a group of B-52H unit tactics teams and selected instructors the first training session oriented to the new command approach for total tactics training. This has been a significant milestone to be followed by full implementation of this program to significantly improve SAC's future and current war fighting capability. First Combat Evaluation Group's mission has indeed changed — it is significantly broadened and, even more than in the past, encompasses the full meaning of standardization. The word "combat" in 1 CEVG's title has taken on renewed meaning.

About the author. Lt Col Harford is Chief, Tactical Aircrew Training Branch at HQ SAC. He has been in this position since July 1985 and is a former instructor pilot with 4430 hours in B-52 C, D, E, F, and H model aircraft. He has been a CCTS instructor, Chief of Stan/Eval, and an FMS and OMS squadron commander.

"Another Checklist Discipline and Safety Article"

(But it's worth your time to read it)

Capt William W. Fults
4315 CCTS, Vandenberg

Looking back at a successful and positive experience as a SAC missile launch officer, I attribute most of that success to a devoted practice of following the checklists in the operations technical order. I want to share with you one very significant experience of mine which proves the incalculable value of disciplining oneself to trust and use checklists when accomplishing procedures. An extremely unfortunate and tragic incident occurred during an alert tour that forever instilled in my mind the benefit of following established standards, particularly from a safety standpoint.

The alert started the day of New Year's Eve. Everyone has to pull a holiday alert from time to time. When given the opportunity of volunteering for a Thanksgiving, Christmas, or New Year's alert, I volunteered for New Year's Eve. I checked the crew weekly schedule and noted my crew commander and I were scheduled for duty at a launch control center (LCC) which was "shut down," (inoperative) therefore, our crew activities would be fewer than usual. Since the last several alerts I had been on were extremely busy and demanding, I welcomed what appeared to be a break from the routine. But what might have been a quieter alert than usual vanished while I attended the predeparture briefing.

My crew commander and I discovered that the LCC we were going to was to be "started up," which meant a busy day for us, beginning with the job of transporting critical components to the LCC. In addition to these tasks, extensive maintenance was scheduled in our flight area which required our supervision once we regained operational status monitoring capabilities. Our hopes for a quiet alert dashed, my crew commander and I began to go over details of the work schedule before us and concentrate on the job we faced.

After stopping at the unit codes vault for the components and a codes briefing, we made the trip to the launch control facility. While accomplishing crew changeover, we were briefed on the status of our LFs and took note of maintenance in progress at one of them, even though another LCC had operational control of our flight. Our checklist actions satisfied, we processed the off-going crew from the LCC and watched them disappear behind the blast door on their way to a night of celebration at a squadron party. Our holiday alert continued.

> **"The EMT arrived at the launcher in minimum time but there was nothing they could do; there was no checklist to help now. The airman was dead."**

We processed the startup team into the LCC and began to bring the capsule back to life. The maintenance team had their T.O. procedures and we had ours; together we initiated the process. As the team installed the new components, turned switches on, and depressed circuit breakers, I noticed how closely the team members followed their checklists. When the team completed their actions, we began our procedures giving life to a system of lights, alarms, and printouts. Continuing with the checklist, we acquired our time slot from the LCC which had status monitoring responsibilities for our flight. That crew briefed us on the status of the LFs, which included maintenance in progress at one of them. After a few cross-checks of system indications with wing job control and the wing command post, our LCC was declared operational. The maintenance crew departed the LCC and we settled down for the remainder of the alert.

Then it happened. The communications line rang from the LF where maintenance was in progress. The team chief's voice was shaken as we were told a team member was injured. I immediately ran the crew contingency checklist and contacted the wing command post. An emergency medical team (EMT) was quickly dispatched to the LF. One of the maintenance team members, an airman, was trapped inside the launcher. The missile had shifted on its support rods, pinning the technician against the launcher wall with a tremendous amount of force and pressure. The EMT arrived at the launcher in minimum time but there was nothing they could do; there was no checklist to help now. The airman was dead.

Why? What caused this terrible accident? I had been in the Air Force long enough to realize that there must have been some deviation from normal procedures. The accident investigation revealed this to be true. As I said early on, this was New Year's Eve. In an effort to save time, and get home early, the technician had proceeded with a maintenance task without referencing the applicable T.O. checklist, believing the procedure could be accomplished more quickly if the checklist steps were not read. This was the first critical mistake. Safety precautions in the checklist for the procedure required the technician to accomplish preventive measures to keep the missile support rods from shifting. But without the checklist to reference, the airman made another critical mistake — forgetting to perform the step that would have saved a life. As the technician continued with the procedure, the accident happened.

The unnecessary loss of that airman's life left a permanent impression in my mind about the importance of self-discipline and adherence to T.O. checklists, regulations and operating practices. Following "tech data" is a principle any training program hopes to achieve, but not at such a dear cost. When individuals breach self-discipline in following established standards because they "know the checklist," the safety of personnel and equipment are at stake, as well as the mission. Accidents are waiting to happen. By "following tech data," you and I can do a great deal to avoid them.

About the author. Capt Fults was commissioned through AFROTC and had duty as a deputy missile combat crew commander (DMCCC), standardization/evaluation DMCCC, missile combat crew commander and EWO operations plans officer. He was an Assistant Professor of Aerospace Studies (AFROTC) prior to becoming an instructor at the 4315 CCTS.

SAC SAFETY SCREEN

5 BMW, Minot Crew R-123: P Capt Stephen Hogg, CP 1Lt Jeffrey Chance, N Capt Susan Siegmund, BO Sgt James Sugden

5 BMW, Minot Crew R-116: P Capt Christopher O'Grady, CP 1Lt Patrick Keefe, Sub N 2Lt William Sargent, BO Amn Richard Zak

320 BMW, Mather Crew E-33: AC Maj Augustus L Gladding, CP Capt Douglas J Wright, RN Capt Gary W Crews, NN 2Lt Bradley R Martin, EW 1Lt Michael W Morrison, AG TSgt Gary W Jackson

320 BMW, Mather Crew R-14: AC Maj John Gavin, CP 1Lt William J Nordhausen, RN Capt John L Leech, NN 1Lt Thomas J Cavanaugh, EW 1Lt Julien L Plante, AG A1C Bradford H Littlefield

320 BMW, Mather Crew R-111: AC Maj Marc McBride, CP 1Lt Kenneth Kuhr, NN 1Lt Charles Aliberto, BO A1C Scott Holden

320 BMW, Mather Crew R-105: AC Capt Grant Gillham, CP Capt Richard Malone, NN Capt Richard Dolan, BO A1C Frank Jirik

23 BMS, Minot Crew R-22: P Capt Steve Achee, CP 2Lt Tim Weiher, IRN Capt Barry Olson, N 1Lt John Romero, EWO 1Lt Jeff Mineo, G A1C Pat Daniels

23 BMS, Minot Crew S-33: P Maj John Graham, CP 1Lt Perry Mckeon, IRN Capt Gregg Gustafson, N 1Lt Dave Seals, EWO 1Lt Billy Shrader, G SSgt Alan Hotaling

23 BMS, Minot Crew E-41: P Maj Bruce Brown, CP 1Lt Gerry Coleman, IRN Capt Rich Perraut, N Capt Ken Peters, EWO 1Lt Ed Chupein, G TSgt Randy Sanderson

351 SMW, Whiteman Crew S-070: MCCC Capt Michael C Hall, DMCCC 1Lt Thomas P Turner

308 SMW, Little Rock Crew E-162: MCCC 1Lt Gary S Lukach, DMCCC 1Lt Christopher A Reams, MSAT Sgt Timothy Duke, MFT SrA Phillip Sells

328 BMS, Castle Crew IT-23: IP Capt Mark A Gunzinger, IRN Capt James R Biernesser, RN Maj Chad T Mortensen, IG Sgt Christopher M Brady

328 BMS, Castle Crew IT-23: IP Capt Gary T Rogers, IRN Capt Michael R Godbey, IEWO Capt James P Ferguson, IG SSgt Perry L Tillman

924 AREFS, Castle Crew E-116: P Capt Edward R Bruce, CP 2Lt Ronald W Hopper, N 1Lt Jerome A Rodgers, BO SSgt Larry D Townsend

924 AREFS, Castle Crew E-106: P Capt David A Hornung, CP 1Lt Steven B Anderson, N 1Lt Mark D Dias, BO TSgt Charles R Clift

93 AREFS, Castle Crew: IP Maj Oscar McNew, IN Capt Brenda Whitmer, IBO TSgt Roger S Page

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338 SBTS, Dyess Crew Z-62: IP Maj James T Acklin, IOSO Maj Brian M Weisel, IDSO Capt Steven A Cornelison

337 BMS, Dyess Crew R-12: P Capt John Chilstrom, CP Capt Richard Davis, OSO Capt Stephen Clark, DSO Capt Timothy Young

917 AREFS, Dyess Crew E-135: IP Capt June A Lindner, CP 1Lt Jimmy D Crouch, N 1Lt Alden B Furlough, BO TSgt Thomas J Hines

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WANTED:
DEAD or ALIVE

Wanted: Editor for Combat Crew magazine.

Job Description: Chief, Safety Education Division, HQ SAC/IGFE. In addition to editorial duties, you will also manage the SAC Safety Awards and Recognition Program and be the project officer for the annual SAC Safety Management Course.

Requirements: Senior captain or major, pilot, and although journalism experience would be beneficial; it is not required.

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